

**GOVERNMENT OF INDIA
SCIENCE AND TECHNOLOGY
LOK SABHA**

UNSTARRED QUESTION NO:3252
ANSWERED ON:23.03.2005
GENE REVOLUTION
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Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

- (a) whether after the green revolution, India needs gene revolution to develop high yielding foodgrain varieties to be able to feed much larger population in future;
- (b) if so, whether the Government has asked the scientists to work on projects in this regards; and
- (c) if so, the details thereof?

Answer

MINISTER OF STATE (INDEPENDENT CHARGE) OF THE MINISTRY OF SCIENCE & TECHNOLOGY AND MINISTER OF STATE (INDEPENDENT CHARGE) OF THE DEPARTMENT OF OCEAN DEVELOPMENT (SHRI KAPIL SIBAL)

(a): Yes, Sir. The Green Revolution is showing signs of fatigue and farm productivity increases are flattening as many of the crop varieties are nearing their biological limits of productivity, and increase in their productivity with high agricultural inputs may not be feasible in future. To meet the needs of our increasing population, we need to increase our food production with less per capita arable land, less water and other natural resources under increasingly adverse environmental conditions. Advances in plant biotechnology make it possible to transfer defined genes from any source into our crops across the reproductive barriers, for improving their productivity.

(b) & (c): The Government is supporting research projects on cloning and characterization of genes of agronomic importance and their transfer into our important crops. These efforts have resulted in identification of more than two dozen genes such as Bt., protease inhibitor, ferritin, lectin, fatty acid desaturase genes, tissue specific promoter, protein quality and salt resistant genes. In addition, Indian Initiative for Rice Genome Sequencing has identified many genes, and subsequently a new multi-institutional network programme on Rice Functional Genomics has been commissioned for identification and functional analysis of genes related to yield and biotic stresses. The Government is already supporting research projects on biotechnological interventions for improving productivity, reducing losses due to biotic and abiotic stresses and improving nutritional quality of crops such as Rice, Mustard, Tomato, Mungbean, Chickpea, Potato, Sweet Potato, Cotton, Sugarcane etc. Indian Council of Agricultural Research (ICAR) has also contemplated a new programme to develop transgenics in important crops such as rice, sorghum, maize, chickpea, pigeon pea, cotton, mustard, banana, papaya, tomato, brinjal, potato and cassava for important specific traits. The project would be undertaken by 20 ICAR institutions specializing in the genetic improvement of these crops.